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YOU AND RESEARCH.

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RESEARCH IN VOCATIONAL EDUCATION IS THE RESPONSIBILITY OF STATE STAFF, TEACHER EDUCATORS, DIRECTORS, SUPERVISORS, COORDINATORS, AND TEACHERS THROUGHOUT THE UNITED STATES. RESEARCH IS IMPORTANT IN EVERY ASPECT OF MODERN LIVING, BUT IT IS VITAL IN THE VOCATIONAL AND PRACTICAL ARTS FIELDS WHERE MANY QUESTIONS, MANY PROFOUNDLY AFFECTING POLICIES, REMAIN UNANSWERED. THE SMALL AMOUNT OF RESEARCH PRODUCED IN THE VOCATIONAL FIELD HAS BEEN DUE TO ITS NEWNESS AND TO THE LACK OF COMPETENCE OF PERSONNEL IN RESEARCH PROCEDURES. CONTINUOUS RESEARCH IS NEEDED TO DETERMINE THE MOST SATISFACTORY TECHNIQUES, ORGANIZATION, CONTENT, AND PROCEDURES IN TEACHING, SUPERVISION, AND ADMINISTRATION. FEDERAL VOCATIONAL EDUCATION ACTS HAVE MADE SOME PROVISION FOR RESEARCH ACTIVITY, AND DEPARTMENT OF EDUCATION STUDIES AND PUBLICATIONS HAVE BEEN USEFUL, BUT VAST AREAS STILL NEED TO BE STUDIED. RESEARCH COULD RESULT IN ANSWERS TO PROBLEMS SUCH AS EFFECT OF TECHNOLOGICAL CHANGE ON VOCATIONAL EDUCATION, STUDENT SELECTION, TRAINING OF ADULT WORKERS, TEACHER TRAINING, AND NEEDS OF THE HANDICAPPED. RESEARCH IN THE FIELD WILL PROSPER WHEN EACH MEMBER OF THE PROFESSION CONSIDERS IT HIS RESPONSIBILITY AND PRIVILEGE TO PROMOTE AND ENGAGE IN RESEARCH AND EXPERIMENTATION AND USE RESEARCH FINDINGS IN HIS EVERYDAY WORK. (WB)

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YOU and RESEARCH

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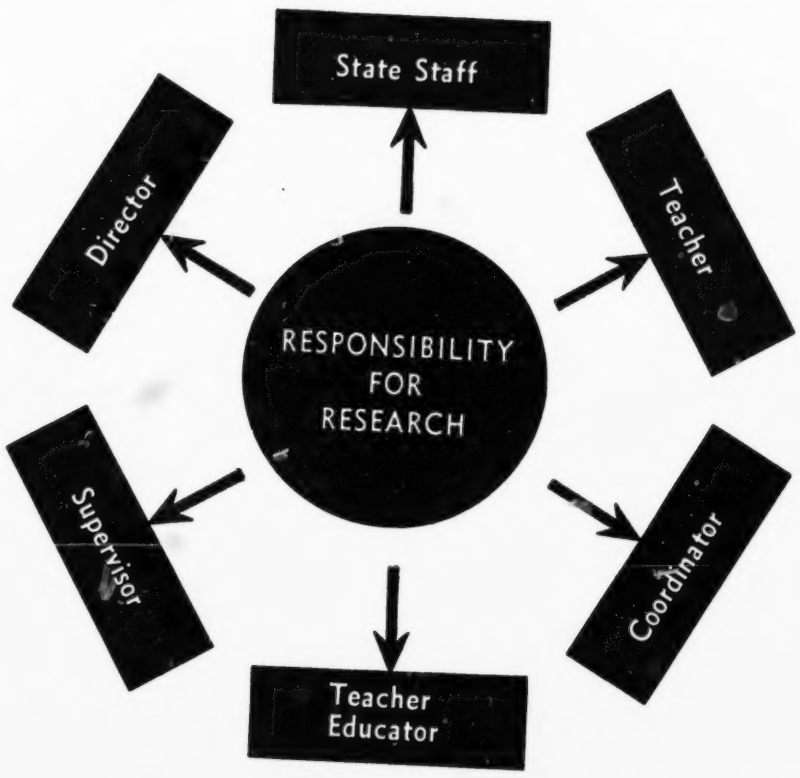

"Any realistic program of education for work must be based on a continuing analysis of the social and economic needs and trends of the total area served by the schools. The geographical limits of the area to be served, the scope of the program of vocational education in terms of numbers involved, buildings to be constructed, possibilities of placement, as well as the determination of budget, personnel, public relations, and numerous other aspects of a total attack upon the problem must rest on the solid, unassailable foundations of research."

EDWIN A. LEE,
First President of the AVA,
Dean of School of Education,
University of California at Los Angeles

niques are based on research. The really great changes of the past—as of the future—stem from the creative ideas of men and women working in the laboratory, in the drafting room, and in the shop. Our production records and constantly-rising standard of living are results of expanding efforts and increased funds devoted to research.

"The wonder of America is its unbelievable industrial productivity, its unparalleled technological advances, and its standard of living for all Americans unsurpassed on earth. Our industrialists believe we are just beginning—that in the test tubes and cyclotrons of industrial research laboratories lies a future we can scarcely envisage; that every dream for tomorrow will be born there. Industry relies upon and invests heavily in research."

—GEORGE H. FERN, Director,
Education Department,
National Association
of Manufacturers

Growth of research and technological progress in the United States exhibit the same accelerating trend. Tremendous expansion has taken place in research activities in past decades. The following statements indicate the nature of some of these developments.

The last fifteen years have seen a tenfold increase in the nation's effort in creative technology, with 150,000 to 170,000 graduate engineers and scientists now employed in research and development projects, as opposed to 20,000 in 1939. (American Society of Mechanical Engineers)

As late as 1953, only $2½ billion was expended on research and development in the United States. Today, about $4 billion is being spent. Conservative estimates for 1973 predict about $10 billion scheduled by American industry and government for research purposes. (National Association of Manufacturers)

In recent years, the function of research in education has been expanded enormously. The estab-

Purpose of This Publication

Why should you, a vocational or practical arts educator, be interested in research?

It is easy to imagine a teacher or administrator thinking: "We have a job to do—teaching the skills needed for occupational competency—so let's get on with it. Isn't most research just an academic exercise? And even if research is worthwhile, shouldn't it be left for the experts to worry about?"

The doubting Thomas will find answers to these questions in the pages that follow. Certainly we must carry on with our job of teaching—and research is a necessary part of that job. We must make progress in our teaching, we must explore the way ahead, and we must keep up to date and relate our teaching to what is going on around us. Research should help all of us to do these things in better, more efficient ways.

More important to progress in vocational and practical arts education than the establishment of specialized agencies of research—significant as that may be—is the development of a research attitude in every educator, from the state director to the local coordinator and teacher. There must be, on the part of everybody engaged in these fields, a clear recognition of the urgent need for and value of educational research.

The importance of research to every aspect of modern living, the vital role of research in education, the need for increased emphasis on research in vocational and practical arts education, the benefits to be reaped from expanded study of problems in these fields, and the individual teacher's place in the program of research are discussed in this publication.

You and Research

America is "research-minded," whether the problem be designing shock absorbers for atomic submarines, improving pressure saucepans, finding cures for cancer, or developing seedless watermelons.

The pace of progress in our country has been set by research. New products, new systems, new tech-

lishment of the Cooperative Educational Research Program in the Office of Education, U. S. Department of Health, Education, and Welfare, in 1955, is evidence of both need and increased support of educational research. Numerous foundations which customarily have given support to research in other areas of our society have increased the volume of financial support for educational research in recent years. These may be regarded as evidences that education is a field that can and does respond to research.

"The extent of all forms of research carried on by the American corporation today is almost beyond normal comprehension. The great strides made in our economy and consequently in the standard of living of our people is almost entirely due to the millions of dollars spent annually to promote research leading to national progress."

—J. WHITNEY BUNTING.
Consultant, Educational Research—General Electric Company

Research in Vocational Education and the Practical Arts

In the vocational and practical arts fields, many questions, the answers to which would profoundly affect policies, remain unanswered. There has been some recognition of the need and a tendency to heed it, but compared with the need and the possibilities, the accomplishments have been limited.

Vocational and practical arts educators have been relatively tardy in becoming conscious of the importance of research. The cause of vocational education has been handicapped by complacency and failure to evaluate and study our own product.

The small amount of research produced has been due, in large measure, to the developmental status of the field. Vocational and practical arts education are among the newest areas of the curriculum in the public secondary schools. Necessarily, the leaders in vocational and practical arts education have

given their attention to promotional activities and to the development and extension of their programs, rather than to research. The time has now come when more attention must be devoted to thorough study and evaluation of existing programs and to experimentation with new teaching techniques and administrative procedures.

Another limiting factor has been that relatively few persons in the field have possessed adequate competence in research procedures. This situation is gradually being improved, as more and more young vocational educators who have had experience with research techniques enter the field.

Promise may be seen in the fact that there is an increasing receptivity to research on the part of teachers and administrators in vocational and practical arts education. Increase in both the research quantity and quality in the field may be expected in the future.

Research Can Help

The programs of vocational and practical arts education will benefit greatly from added research. It has grown so quickly, its problems are so complex, and new demands occur so rapidly that continuous research is needed to determine the most satisfactory techniques, organization, content, and procedures. There is great need to determine experimentally the most effective procedures in teaching, administration, and supervision. There is great need also for cooperative undertakings with research scholars in the fields of economics, engineering, psychology, and sociology.

Some provisions for research activity have been made by the federal vocational education acts. As a result of these provisions, the Division of Vocational and Technical Education, Office of Education, U. S. Department of Health, Education, and Welfare, has done some research on a national scale, and has promoted and provided guidance for research done by states and regions. Studies conducted by other divisions of the Department of Education have been of value to our field. The Division's annual digests, reports, and bulletins contain a wealth of material disclosing the extent and progress of the vocational programs and of the research

activities of the Division. Although these accomplishments have been significant, there are vast areas needing study that have, thus far, remained untouched. Efforts from many directions and by many individuals and groups will be required as progress is made toward meeting needs.

"Research, whether it is farm research or research with respect to program development, serves as a 'pace setter' and determines the rate and the limits of progress. In the field of agriculture, farmers have increased agricultural productivity 78 percent since 1940. Without research this could not have been accomplished."

—ROGER FLEMING, Secretary-Treasurer, American Farm Bureau Federation

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Vocational and practical arts education can reap great benefits from research. The many unsolved problems in the field have retarded progress. There are controversial points that have led to confusion. Many courses from these fields have been built on opinion rather than fact—because research was overlooked as an aid to improving instruction.

Widespread research could result in factual answers to such questions as—

1. What has been the impact upon vocational and practical arts education of the rapid technological changes occurring in industry? (What training is needed for new types of occupations? What new supervisory training is necessary? What new content should courses include?)
2. What procedures and standards are appropriate for selection of students for vocational courses?
3. Which learning activities have most value for youths preparing for occupations? (Experimental work needs to be done to discover the merits of the exercise vs. the project, the

pseudo project vs. real jobs, cooperative educational programs vs. institutional, laboratory experiments vs. work on real equipment, demonstration vs. supervised experimentation.)

4. How can follow-up studies of graduates make their greatest contribution to the program?
5. What are the philosophical, economic, psychological and social bases for vocational and practical arts courses?
6. How can more adequate related instructional materials be prepared and utilized in the several fields of vocational and practical arts education?
7. How can training services for adult workers best be extended and improved?
8. How can the education of guidance personnel be improved to include more experience in and knowledge of occupations?
9. What is the relationship between organizational structure and the effectiveness of a vocational education or practical arts program?
10. How can educational programs and courses for vocational and practical arts teachers be improved?
11. How can the special needs of individuals such as the handicapped, the unemployed, the slow learner, and the dropout be met most effectively in programs of vocational and practical arts education?
12. What are the common elements in the various fields of vocational and practical arts education and what do these mean for cooperative efforts in the future?

Granted that research is vital to our nation's prosperity and progress, granted that vocational education, and the practical arts would be strengthened if policies were based on the solid foundation of statistical studies and experimental research, you may still be asking yourself these questions: "Why should *I* be concerned with research? Shouldn't it be left to the experts?"

Yes, the experts should be doing more research than they are now—but research in our field will not get very far without the cooperation of every teacher, coordinator, supervisor and administrator

engaged in vocational and practical arts education. Research cannot be left to a few specialists on the staff of the state department of education or to professors in the state teacher-education institutions. It is *your* responsibility.

Research in our field will prosper when each member of the profession considers it his own professional and personal responsibility and privilege to

- engage in research and experimentation
- to promote research activity, and
- to use the findings of research in his everyday work.

This last point merits some special discussion. Research findings in a report that merely gathers dust on a library shelf mean little in terms of meeting the needs of the field. It is only in the application of the findings that gives real meaning and value to research. Dissemination and application of the results of research are important aspects of the total job that needs to be done in vocational and practical arts education.

No matter what your place may be in our field, *you* have an important part to play in research. Let us look more closely at some of the things that you can do!

Your Responsibility as a Teacher

The teacher has a unique opportunity to aid in research programs because he is at the focal point of the whole educational process. All useful investigation starts with a problem arising in actual experience. The teacher is well situated to initiate inquiry, for he feels the need for more effective ways of performing his responsibilities.

Even if he does no more than ask a question, leaving it to others to find the answer, the teacher is making a contribution. In actual practice teachers can do more than ask questions; they can supply answers, also. Many persons are now doing research without realizing it. A good teacher is constantly experimenting. When a teacher recognizes a teaching problem and tries to solve it, he is conducting a form of research.

Your responsibility is to make known the results

of your own "amateur research." Volunteer information to the research specialists in your field. Assist in the establishment of pilot programs to test teaching methods and administrative ideas. Offer your own shop or classroom as a laboratory.

You can help other teachers by telling them about your experiences—in person at conferences and workshops or in writing through your state and national professional journals.

"Central to research in the social sciences is the problem of education, and it is crucial to our national welfare. Justifiable confidence in the future of our democracy lies in universal education programs of a quality not achieved as yet in our most favored communities. I take it as axiomatic that such programs can be developed only through the highest quality of research in education and the immediate translation of such research into the schools by gifted and thoroughly trained teachers and administrators."

—LAWRENCE A. KIMPTON,
Chancellor, University
of Chicago

Become better acquainted with the techniques and methodology of research so that you can better assist persons responsible for research programs and also conduct research yourself. Toward this end, excellent textbooks and references on research design and techniques are available. Or, plan to take a course in research methods as a part of your program of graduate studies or self improvement.

Groups of teachers who are interested in similar problems can work effectively as a team. Sharing knowledge and skills makes the attack on the problem more likely to succeed.

As a teacher, you can make a major contribution to the progress of research by promptly handling all requests for assistance in gathering statistics and information. Answer correspondence completely and fully. Check questionnaires thoughtfully and accurately. Cooperate in every way with those who are conducting research studies in your field.

Emphasize the importance of research to progress in your field of education so that teachers become aware of its significance to them and of the specific part they should play in its completion.

Your Responsibility as a Local Director

A local director is in a position to influence the professional attitudes of vocational personnel in the school system; thus, it is most important that you exhibit a lively interest in and appreciation of research. Staff meetings should include reports of pertinent research in progress, evaluation of completed studies, and discussions of how to put research findings into action in the schools.

Encourage your faculty to engage in research; to experiment with new methods, procedures, and instructional materials; to cooperate fully with all individuals engaged in research; and to participate actively by cooperating with research undertakings carried on by educational agencies and professional organizations.

Make it your business to become familiar with research procedures so that any studies conducted by the faculty in your school and departments will be in accordance with approved techniques.

More and more local boards of education are creating research positions on their staffs. In the larger community it is the responsibility of the local director of vocational and practical arts education to (1) urge the appointment of a research specialist or (2) make certain that the research experts hired are kept informed about the needs in your fields of responsibility. If local funds are available for research, you should see to it that some money is used to further studies in vocational and practical arts education.

Your Responsibility as a Teacher Educator

Teacher educators have a major role to play in the expansion of research and the development of a research attitude. They not only devote their time to the conduct of special studies of value to vocational and practical arts education, but also direct the research work of the many students under their supervision.

Present problems for study to your state department, teacher education institutions, or state associations. Through faculty meetings, teachers' conferences, and professional meetings encourage the use of state and local funds for research purposes.

As a member of your state vocational association and the AVA, you can work with other members of the profession to encourage increased efforts in research and expanded use of research results. Cooperate with research committees in your state association and in the several AVA divisions. If your state does not now have an active, functioning research committee, exercise your influence to establish one.

Urge your state association to enlist support from industrial, business and farm groups in the solution of problems of concern to them.

Your Responsibility as a Supervisor

All that has been suggested for teachers applies also to those in supervisory and administrative positions at the state and local levels, to those responsible for teacher education, and to the specialists in vocational and practical arts education working for state and national educational agencies. Educators in these positions have special responsibilities for carrying out research and for fostering psychological support for the work.

As a supervisor, you can utilize the latest research findings. Keep teachers informed of the progress and results of research in your field. Prepare reports of research in progress and research findings for distribution to teachers under your supervision.

Encourage teachers to utilize research data and through experimentation to confirm or reject the original findings. Find out what problems are bothering your teachers and set up cooperative arrangements to gather statistics and other information leading to their solution.

Make research one of the topics at staff meetings and at local and regional teacher conferences. Stress not only discussions of research studies but also the practical application of the findings to the teacher's everyday teaching situations.

Under our system of higher education, most graduate students must complete an original research assignment as a requirement for a degree. As more and more vocational teachers receive preparation in institutions of higher learning, the teacher educators exert an increasing influence over them. It is within their power to create an interest in research and to develop an attitude which enables teachers to base their action on factual evidence.

As a teacher educator you face the task of developing and maintaining high interest in research. You should not destroy enthusiasm by insistence upon endless details and yet you must instill respect for valid research procedures. Preserve a balance among experimentation, creative thinking, and dependence upon authority and factual evidence.

The responsibility of the teacher educator also entails "publicity" for the research studies carried out under his direction. Too often the valuable work of graduate students is lost because it never leaves the professor's office or the library shelves. Work on the problem of developing ways to make known the findings of your students.

Your Responsibility as a State Staff Member

The generous support given to vocational education programs by Congress has resulted in additional funds for use in the states. Increased allocations to states will make it possible for vocational education divisions to devote a portion of the federal funds to research. Here is an opportunity for every state to expand its research facilities.

"The development and extension among greater numbers of people of a research attitude—an attitude of search for truth—can be a powerful force making for stability and reason in a conflicting world."

—ARTHUR TRAXLER,
Educational
Records Bureau

It is essential that state directors of vocational education have an understanding and appreciation

of research activities, since they have the authority to recommend the expenditure of funds for such purposes. As a state director, you should exert leadership in the field by designating funds and personnel for research purposes.

Locate qualified research specialists for all the fields of vocational education. Such experts should devote full time or part time to conducting pertinent research on a statewide basis. Studies so carried on should be given the widest possible publicity among teachers and administrators throughout the state. The responsibility for dissemination and follow up of the results of research is as important for the state staff as the obligation to conduct it. The department's budget should include funds for publishing reports of research.

As state supervisors of the various fields of vocational or practical arts education, your responsibilities parallel those of the supervisor at the local level. You have the additional task of organizing research efforts on a statewide basis, or coordinating the activities of individual local people and local groups so that all may benefit from studies made.

The teachers' conferences you plan, whether within the state or on a regional basis, should include periods devoted to research—the promotion of new studies, reports of research in progress, dissemination of the results of research and the application of findings to practice. You can help to sponsor a continuous program of research which will serve as a basis for solving the problems in your particular field of service. You are in a position to stimulate the organization of experimental and demonstration centers and can offer advice to those school systems which have established such centers.

There are many problems facing vocational and practical arts education which can best be solved through a statewide attack on the problem, organized through the state department of education. Often it is advisable for several states to pool their financial resources and research services in the solution of certain problems that exist on a regional basis. Members of the state staffs for vocational and practical arts education should be alert to opportunities for cooperative research of this nature.

"As a nation Americans are becoming social-science-minded. They look to science to approve or repudiate their notions of which procedures are effective and which are ineffective for enlarging their understanding, so that family welfare can be forwarded matter-of-factly and confidently. This means a demand for more experimental research than in the past, and for the lifting of its standards and relevance."

—NELSON N. FOOTE,
Director, Family
Study Center,
Univ. of Chicago

Cooperation in Research Brings Results

If one fact stands out above all others, it is that the problems of research cannot be solved by any one agency. The cooperative efforts of all groups concerned with vocational and practical arts education and its products must be focused on the problem. Labor and management groups, farm organizations, business and distributive enterprises, and homemakers' groups should be called upon for assistance. Many such groups, or individual firms, are interested in solving specific problems and are willing to work with the schools on cooperative research studies. School people must team up with other groups to find solutions which are quickly applicable so that the vocational and practical arts education of tomorrow will be the best we can conceive today.

Vocational and practical arts educators are preparing the future productive forces of our nation. To meet this great responsibility adequately, there should be serious and thorough research in the fields of teacher preparation and teacher competency, in methods of doing the most desirable teaching job, and in the effective utilization of facilities and teaching devices.

What kinds of courses and what kinds of course content will produce graduates capable of moving our civilization forward? With more and more emphasis being placed upon technological research to

improve products and production methods, is it not reasonable that we should give attention to research that will improve America's greatest strength—educated human resources?

The philosophy of vocational and practical arts education supports the belief that our American society can remain strong only as it strengthens all citizens. Vocational and practical arts education programs are committed to promoting the general welfare by developing the productive capacity of each citizen so that he can serve his generation completely, efficiently, and happily. To accomplish this goal, vocational and practical arts educators need the motivating factor which has been the key to continued progress in all aspects of our national economy—research. EDUCATION IN AMERICA IS WAITING FOR *YOU* TO TAKE ACTION.

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